BIT MANIPULATION SOLUTIONS

Solution 1: The value of x^x = 0.

Think about it, xor gives 0 when the bits are the same. If we compare the same number to itself, the bits will always be the same. So, the answer of x^x will always be 0.

Solution 2: The idea is to use XOR operators to swap two numbers by their property

x ^ x = 0

```
public class Solution {
   public static void main(String[] args) {
       int x = 3, y = 4;
       System.out.println("Before swap: x = " + x + " and y = " + y);
       //swap using xor
       x = x ^ y;
       y = x ^ y;
       x = x ^ y;
       System.out.println("After swap: x = " + x + " and y = " + y);
   }
}
```

Solution 3 : The expression -~x will add 1 to an integer x. We know that to get negative of a number, invert its bits and add 1 to it (Remember negative numbers are stored in 2's complement form), i.e.,

-x = ~x + 1;

-~x = x + 1 (by replacing x by ~x)

```
public class Solution {
   public static void main(String[] args) {
       int x = 6;
       System.out.println(x + " + " + 1 + " is " + -~x);
       x = -4;
       System.out.println(x + " + " + 1 + " is " + -~x);
       x = 0;
       System.out.println(x + " + " + 1 + " is " + -~x);
   }
}
```

Solution 4 :

```java
public class Solution {
   public static void main(String[] args) {
       // Convert uppercase character to lowercase
       for (char ch = 'A'; ch <= 'Z'; ch++) {
           System.out.println((char)(ch | ' '));
            // prints abcdefghijklmnopqrstuvwxyz
       }
   }
}
```